〔Anal. Sci., 5, 651 (1989)〕

In-Situ Electron Spin Resonance and Voltammetric Studies Using an Internal-Flow-Type Electrolysis Cell.

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A newly designed three-electrode electrolysis cell for *in-situ* electron spin resonance (ESR) spectroscopy and cyclic voltammetry is described. An electrolysis solution near the electrode surface is continuously renewed by an internal-flow method, which make it possible to record the well-resolved ESR spectra of unstable free radicals. An accurate control of the electrode potential using an ohmic drop corrector has enabled us to obtain fairly good voltammograms. This cell can be applicable to both oxidation and reduction experiments in aprotic and protic media at an arbitrary temperature by the use of a temperature-controlled Dewar vessel. Some fundamental experiments are reported.

〔J. Pharm. Sci., 78, 68 (1989)〕

Preparation of Controlled-Release Microspheres of Ibuprofen with Acrylic Polymers by a Novel Quasi-Emulsion Solvent Diffusion Method.

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A novel quasi-emulsion solvent diffusion method to prepare the controlled-release microspheres of ibuprofen with acrylic polymers has been developed. An ethanol solution of ibuprofen and acrylic resin was poured into aqueous medium with stirring. The finely dispersed ethanolic droplet-like coacervates formed in aqueous medium were gradually solidified and transformed into microspheres during agitation. The size of microspheres was determined by the concentrations of drug and polymer and the agitation speed of the system. The flowability, the packability, and the compressibility of the resultant microspheres were much improved compared with the raw crystals of the drug.

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Computer Simulation of Agglomeration by a Two-Dimensional Random Addition Model- Agglomeration Kinetics and Micromeritic Properties of Agglomerate Accompanied by Compaction Process.

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In order to elucidate the mechanism of the compaction process of wet spherical agglomeration, computer simulation of agglomeration with compaction was carried out using a random addition model. The agglomeration process simulated by this model was described by a non-random coalescence agglomeration and the compaction process of agglomerate was represented by the modified Kawakita's equation.